

Qy	421	Thr***AlaGluGlyGluAla*****LeuAspLeuArgGly***HisPheGlnLeuLeu	440
Db	1261	ACAGGGGCTGAAGGGGAAGCAAGGCCTCTTGATCTTAGGGGACAACATTTTCAACTTCTC	1320
Qy	441	ProPheGlySerGlyArg***MetCysProGlyVal***LeuAlaThrSerGly***Ala	460
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Qy	461	ThrLeuLeuAlaSerLeuIleGlnCysPheAspLeuGlnValLeuGlyProGlnGlyGln	480
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Qy	501	ArgAlaHisSerLeuValCysValProLeuAlaArgIleGlyValAlaSerLysLeuLeu	520
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DB:	8	Gaps:	0

US-09-857-581-66 (1-521) x AF135484 (1-1722)

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 Qy 81 ValValAlaSerThrProGluLeuPheLysLeuPheLeuGln*****GluAlaThrSer 100
 Db 276 GTTGTTCCTCCACACCAGAAATTGTTCAAGCTCTTCCTCCAAACGCACGAGGCAACTTCC 335
 Qy 101 Phe***ThrArgPheGlnThrSerAla***Arg***LeuThrTyrAsp*****ValAla 120
 Db 336 TTCAACACAAGGTTCCAAACCTCAGCCATAAGACGCCTCACCTATGATAGCTCAGTGGCC 395
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 Qy 201 IleAlaArgGluValLeuLysIle***GlyGluTyrSerLeuThrAspPheIle***Pro 220
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 Qy 241 AspProValValGluArgValIleLysLysArgArg***IleValArgArgArg***Asn 260
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 Qy 261 GlyGlu*****GluGlyGlu***SerGlyVal***LeuAspThrLeuLeuGluPheAla 280
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Rosidae; eurosids I; Fabales; Fabaceae; Papilionoideae; Phaseoleae; Glycine.

REFERENCE 1 (bases 1 to 1824)
AUTHORS Siminszky, B., Corbin, F.T., Ward, E.R., Fleischmann, T.J. and Dewey, R.E.
TITLE Expression of a soybean cytochrome P450 monooxygenase cDNA in yeast and tobacco enhances the metabolism of phenylurea herbicides
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 96 (4), 1750-1755 (1999)
MEDLINE 99145622
PUBMED 9990096
REFERENCE 2 (bases 1 to 1824)
AUTHORS Siminszky, B., Dewey, R.E. and Corbin, F.T.
TITLE Direct Submission
JOURNAL Submitted (04-SEP-1997) Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695, USA

FEATURES Location/Qualifiers
source 1..1824
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/db_xref="taxon:3847"
gene 1..1824
/gene="CYP93C1"
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BASE COUNT 497 a 448 c 416 g 463 t
ORIGIN

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Score:	2251.00	Matches:	451
Percent Similarity:	86.76%	Conservative:	1
Best Local Similarity:	86.56%	Mismatches:	69
Query Match:	93.95%	Indels:	0
DB:	8	Gaps:	0

US-09-857-581-66 (1-521) x AF022462 (1-1824)

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Qy	521	Ser 521	
Db	1614	TCT 1616	

Glycine.

REFERENCE 1 (bases 1 to 1824)

AUTHORS Jung,W., Yu,O., Lau,S.M., O'Keefe,D.P., Odell,J., Fader,G. and McGonigle,B.

TITLE Identification and expression of isoflavone synthase, the key enzyme for biosynthesis of isoflavones in legumes

JOURNAL Nat. Biotechnol. 18 (2), 208-212 (2000)

MEDLINE 20124255

PUBMED 10657130

REFERENCE 2 (bases 1 to 1824)

AUTHORS Jung,W., Yu,O., Odell,J., Fader,G. and McGonigle,B.

TITLE Direct Submission

JOURNAL Submitted (18-OCT-1999) Nutrition and Health, DuPont, P.O. Box 80402, Wilmington, DE 19880-0402, USA

FEATURES Location/Qualifiers

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BASE COUNT 497 a 448 c 416 g 463 t

ORIGIN

Alignment Scores:

Pred. No.:	1.3e-257	Length:	1824
Score:	2251.00	Matches:	451
Percent Similarity:	86.76%	Conservative:	1
Best Local Similarity:	86.56%	Mismatches:	69
Query Match:	93.95%	Indels:	0
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US-09-857-581-66 (1-521) x AF195799 (1-1824)

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 Db 234 ATCGACCTCTCCAAAAACATGGTCCCTTATTCTCTCTACTTTGGCTCCATGCCAACCC 293

 Qy 81 ValValAlaSerThrProGluLeuPheLysLeuPheLeuGln*****GluAlaThrSer 100
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 Db 294 GTTGTGCTCCACACCAGAAATTGTTCAAGCTCTTCCTCCAAACGCACGAGGCAACTTCC 353

 Qy 101 Phe***ThrArgPheGlnThrSerAla***Arg***LeuThrTyrAsp*****ValAla 120
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 Db 354 TTCAACACAAGGTTCCAAACCTCAGCCATAAGACGCCTCACCTATGATAGCTCAGTGGCC 413

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 Db 594 AAATGGACCAACAGCACCATCTCCATGATGATGCTCGGCGAGGCTGAGGAGATCAGAGAC 653

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Db	1134	GAGACATTCCGCATGCACCCGCCACTCCCAGTGGTCAAAGAAAGTGCACAGAAGAGTGT	1193
Qy	381	***IleAsnGly***Val***ProGluGlyAlaLeu*****PheAsnValTrpGlnVal	400
Db	1194	GAGATTAATGGATATGTGATCCCAGAGGGAGCATTGATTCTCTTCAATGTATGGCAAGTA	1253
Qy	401	Gly***Asp***LysTyrTrpAspArgProSerGlu***ArgProGluArgPheLeuGlu	420
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Qy	441	ProPheGlySerGlyArg***MetCysProGlyVal***LeuAlaThrSerGly***Ala	460
Db	1374	CCATTTGGGTCTGGGAGGAGAATGTGCCCTGGAGTCAATCTGGCTACTTCGGGAATGGCA	1433
Qy	461	ThrLeuLeuAlaSerLeuIleGlnCysPheAspLeuGlnValLeuGlyProGlnGlyGln	480
Db	1434	ACACTTCTTGCATCTCTTATTTCAGTGCTTCGACTTGCAAGTGCTGGGTCCACAAGGACAG	1493
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Db	1554	AGGGCACATAGTCTTGTCTGTGTTCCACTTGCAAGGATCGGCGTTGCATCTAAACTCCTT	1613
Qy	521	Ser 521	
Db	1614	TCT 1616	

AUTHORS Jung,W., Yu,O., Lau,S.M., O'Keefe,D.P., Odell,J., Fader,G. and McGonigle,B.

TITLE Identification and expression of isoflavone synthase, the key enzyme for biosynthesis of isoflavones in legumes

JOURNAL Nat. Biotechnol. 18 (2), 208-212 (2000)

MEDLINE 20124255

PUBMED 10657130

REFERENCE 2 (bases 1 to 1902)

AUTHORS Jung,W., Yu,O., Odell,J., Fader,G. and McGonigle,B.

TITLE Direct Submission

JOURNAL Submitted (18-OCT-1999) Nutrition and Health, DuPont, PO Box 80402, Wilmington, DE 19880-0402, USA

FEATURES Location/Qualifiers

source 1. .1902
/organism="Glycine max"
/db_xref="taxon:3847"

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/product="isoflavone synthase 2"

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RVMAQGAEAQKPLDLTEELLKWTNSTISMMMLGEAEEIRDIAREVLKIFGEYSLTDFI
WPLKHLKVGKYEKRIDDLNKFDPVVERVIKKRREIVRRRNKNGEVVEGEVSGVFLDTL
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PLARIGVASKLLS"

BASE COUNT 517 a 455 c 440 g 490 t

ORIGIN

Alignment Scores:

Pred. No.:	1.06e-251	Length:	1902
Score:	2201.50	Matches:	451
Percent Similarity:	79.72%	Conservative:	1
Best Local Similarity:	79.54%	Mismatches:	69
Query Match:	91.88%	Indels:	46
DB:	8	Gaps:	1

US-09-857-581-66 (1-521) x AF195819 (1-1902)

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Qy      1 MetLeuLeuGluLeuAlaLeuGlyLeu***ValLeuAlaLeuPhe***HisLeuArgPro 20
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Db      52 ATGTTGCTTGAACCTGCACTTGGTTTATTGGTTTGGCTCTGTTTCTGCACTTGGCTCCC 111
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Qy      21 ThrPro***Ala***SerLysAlaLeuArgHisLeuProAsnProProSerPro***Pro 40
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Db 112 ACACCCACTGCAAAATCAAAGCACTTCGCCATCTCCCAAACCCACCAAGCCCAAAGCCT 171
 Qy 41 ArgLeuProPheIleGlyHis***HisLeuLeuLysAspLysLeuLeuHisTyrAla*** 60
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 Db 172 CGTCTTCCCTTCATAGGACACCTTCATCTCTTAAAAGACAACTTCTCCACTACGCACCTC 231
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 Db 232 ATCGACCTCTCCAAAAACATGGTCCCTTATTCTCTCTCTACTTTGGCTCCATGCCAACC 291
 Qy 81 ValValAlaSerThrProGluLeuPheLysLeuPheLeuGln*****GluAlaThrSer 100
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 Db 292 GTTGTTGCCTCCACACCAGAATTGTTCAAGCTCTTCCTCCAAACGCACGAGGCAACTTCC 351
 Qy 101 Phe***ThrArgPheGlnThrSerAla***Arg***LeuThrTyrAsp*****ValAla 120
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 Db 352 TTCAACACAAGGTTCCAAACCTCAGCCATAAGACGCCTCACCTATGATAGCTCAGTGGCC 411
 Qy 121 *****Pro***GlyProTyrTrp***PheValArgLysLeuIleMetAsnAspLeuLeu 140
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 Qy 221 LeuLys***LeuLysValGlyLysTyrGluLysArgIleAspAspIleLeuAsnLysPhe 240
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 Db 712 TTGAAGCATCTCAAGGTTGGAAAGTATGAGAAGAGGATCGACGACATCTTGAACAAGTTC 771
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 Db 772 GACCTGTCTGTTGAAAGGGTCATCAAGAAGCGCCGTGAGATCGTGAGGAGGAGAAAGAAC 831
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 Db 832 GGAGAGGTTGTTGAGGGTGAGGTCAGCGGGGTTTTCCTTGACACTTTGCTTGAATTCGCT 891
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ACCESSION AF195818
 VERSION AF195818.1 GI:7288452
 KEYWORDS .
 SOURCE Glycine max.
 ORGANISM Glycine max
 Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
 Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
 Rosidae; eurosids I; Fabales; Fabaceae; Papilionoideae; Phaseoleae;
 Glycine.

REFERENCE 1 (bases 1 to 1800)
 AUTHORS Jung,W., Yu,O., Lau,S.M., O'Keefe,D.P., Odell,J., Fader,G. and McGonigle,B.
 TITLE Identification and expression of isoflavone synthase, the key enzyme for biosynthesis of isoflavones in legumes
 JOURNAL Nat. Biotechnol. 18 (2), 208-212 (2000)
 MEDLINE 20124255
 PUBMED 10657130
 REFERENCE 2 (bases 1 to 1800)
 AUTHORS Jung,W., Yu,O., Odell,J., Fader,G. and McGonigle,B.
 TITLE Direct Submission
 JOURNAL Submitted (18-OCT-1999) Nutrition and Health, DuPont, PO Box 80402, Wilmington, DE 19880-0402, USA

FEATURES Location/Qualifiers
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 LKYLKVGKYEKRIDDILNKFDPVVERVIKKRREIVRRRKNGEVVEGEASGVFLDTLLE
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 VVGKDRLVDEVDTQNLPIRAIVKETFRMHPPLPVVVRKCTEECEINGYVIPEGALVL
 FNVWQVGRDPKYWDRPSEFRPERFLETGAEGEAGPLDLRGQHFQLLPFGSGRRMCPGV
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BASE COUNT 476 a 441 c 413 g 470 t
 ORIGIN

Alignment Scores:

Pred. No.:	3.04e-250	Length:	1800
Score:	2189.00	Matches:	451
Percent Similarity:	76.18%	Conservative:	0
Best Local Similarity:	76.18%	Mismatches:	68
Query Match:	91.36%	Indels:	74

1

US-09-857-581-66 (1-521) x AF195818 (1-1800)

Qy	3	LeuGluLeuAlaLeuGlyLeu***ValLeuAlaLeuPhe***HisLeuArgProThrPro	22
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Qy	23	***Ala***SerLysAlaLeuArgHisLeuProAsnProProSerPro***ProArgLeu	42
Db	63	AGTGCAAAATCAAAAGCACTTCGCCACCTCCCAAACCTCCAAGCCCAAGCCTCGTCTT	122
Qy	43	ProPheIleGlyHis***HisLeuLeuLysAspLysLeuLeuHisTyrAla***IleAsp	62
Db	123	CCCTTCATTGGCCACCTTCACCTCTTAAAAGATAAACTTCTCCACTATGCACTCATCGAT	182
Qy	63	LeuSerLysLysHisGlyProLeuPheSer*****PheGlySerMetProThrValVal	82
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Qy	83	AlaSerThrProGluLeuPheLysLeuPheLeuGln*****GluAlaThrSerPhe***	102
Db	243	GCCTCCACCCCTGAGTTGTTCAAGCTCTTCCTCCAAACCCACGAGGCAACTTCTTCAAC	302
Qy	103	ThrArgPheGlnThrSerAla***Arg***LeuThrTyrAsp*****ValAla*****	122
Db	303	ACAAGTTCCAAACCTCTGCCATAAGACGCCTCACTTACGACAACTCTGTGGCCATGGTT	362
Qy	123	Pro***GlyProTyrTrp***PheValArgLysLeuIleMetAsnAspLeuLeuAsnAla	142
Db	363	CCATTTCGACCTTACTGGAAGTTTCGTGAGGAAGCTCATCATGAACGACCTTCTCAACGCC	422
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Db	483	ATGGCCCAAAGCGCAGAGGCCAGAACCCCTTGACGTCACCGAGGAGCTTCTCAAATGG	542
Qy	183	***AsnSerThr***SerMetMet***LeuGlyGluAlaGluGluIleArgAspIleAla	202
Db	543	ACCAACAGCACCATCTCCATGATGATGCTCGGCGAGGCTGAGGAGATCAGAGACATCGCT	602
Qy	203	ArgGluValLeuLysIle***GlyGluTyrSerLeuThrAspPheIle***ProLeuLys	222
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Qy	223	***LeuLysValGlyLysTyrGluLysArgIleAspAspIleLeuAsnLysPheAspPro	242
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Qy	243	ValValGluArgValIleLysLysArgArg***IleValArgArgArg***AsnGlyGlu	262
Db	723	GTCGTTGAAAGGGTCATCAAGAAGCGCCGTGAGATCGTCAGAAGGAGAAAGAACGGAGAA	782
Qy	263	*****GluGlyGlu***SerGlyVal***LeuAspThrLeuLeuGluPheAlaGluAsp	282

Db	783	GTTGTTGAGGGCGAGGCCAGCGGCGTCTTCCTCGACACTTTGCTTGAATTCGCTGAGGAC	842
Qy	283	GluThr***GluIleLysIleThrLys*****IleLysGlyLeuValVal-----	299
Db	843	GAGACCATGGAGATCAAAATTACCAAGGAGCAAATCAAGGGCCTTGTTGT-CGTAAGTTT	901
Qy	299	-----	299
Db	902	CCTTCTTCTCTCCTACTTTATTACTTTCTTTTCATTCATCATATGTATTGGCATTAAATAG	961
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Db	1022	AAAAGAGATACAGAAGTTGCTTTTATGCATGTATGTTAACGTATATTTACTCAAGTGGA	1081
Qy	300	-----Asp***PheSerAlaGly***AspSerThr	309
Db	1082	ACTAATTAATTCTCAATTTTGGGTATGTAGGACTTTTTCTCTGCAGGGACAGATTCCACA	1141
Qy	310	Ala*****ThrGluTrpAlaLeuAlaGluLeuIleAsnAsnPro***ValLeu*****	329
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Qy	330	AlaArgGluGlu***TyrSerValValGlyLysAsp***LeuValAspGluValAspThr	349
Db	1202	GCTCGTGAGGAGGTCTACAGTGTGTGGGCAAAGATAGACTCGTTGACGAAGTTGACACT	1261
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Db	1262	CAAAACCTTCCTTACATTAGGGCCATTGTGAAGGAGACATTCCGAATGCACCCACCACTC	1321
Qy	370	ProValValLysArgLysCys***GluGluCys***IleAsnGly***Val***ProGlu	389
Db	1322	CCAGTGGTCAAAAGAAAGTGCACAGAAGAGTGTGAGATTAATGGGTATGTGATCCCAGAG	1381
Qy	390	GlyAlaLeu*****PheAsnValTrpGlnValGly***Asp***LysTyrTrpAspArg	409
Db	1382	GGAGCATTGGTTCTTTCAATGTTTGGCAAGTAGGAAGGGACCCCAAATACTGGGACAGA	1441
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Db	1442	CCATCAGAATTCCGTCCCGAGAGGTTCTTAGAACTGGTGCTGAAGGGGAAGCAGGGCCT	1501
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Qy	450	ProGlyVal***LeuAlaThrSerGly***AlaThrLeuLeuAlaSerLeuIleGlnCys	469
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Db 1622 TTTGACCTGCAAGTGCTGGGCCCTCAAGGACAAATATTGAAAGGTGATGATGCCAAAGTT 1681

Qy 490 SerMetGluGluArgAlaGlyLeuThrValProArgAlaHisSerLeuValCysValPro 509
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Db 1682 AGCATGGAAGAGAGAGCTGGCCTCACAGTTCCAAGGGCACATAGTCTCGTTTGTGTTCCA 1741

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RESULT 14

AF195801

LOCUS AF195801 1501 bp mRNA linear PLN 16-FEB-2000

DEFINITION Medicago sativa isoflavone synthase 2 (ifs2) mRNA, partial cds.

ACCESSION AF195801

VERSION AF195801.1 GI:6979525

KEYWORDS

SOURCE Medicago sativa.

ORGANISM Medicago sativa

Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
 Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots;
 Rosidae; eurosids I; Fabales; Fabaceae; Papilionoideae; Trifolieae;
 Medicago.

REFERENCE 1 (bases 1 to 1501)

AUTHORS Jung,W., Yu,O., Lau,S.M., O'Keefe,D.P., Odell,J., Fader,G. and McGonigle,B.

TITLE Identification and expression of isoflavone synthase, the key enzyme for biosynthesis of isoflavones in legumes

JOURNAL Nat. Biotechnol. 18 (2), 208-212 (2000)

MEDLINE 20124255

PUBMED 10657130

REFERENCE 2 (bases 1 to 1501)

AUTHORS Jung,W., Yu,O., Odell,J., Fader,G. and McGonigle,B.

TITLE Direct Submission

JOURNAL Submitted (18-OCT-1999) Nutrition and Health, DuPont, P.O. Box 80402, Wilmington, DE 19880-0402, USA

FEATURES Location/Qualifiers

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CDS <1..>1501

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